APPENDIX A

Appendix A

Claim	U.S. Patent No. 9,745,551	Canadian Patent Application No. CA2876499
1	A method for producing human embryonic stem cell-derived mesenchymal stem cells (hES-MSCs) comprising: a) culturing human embryonic stem cells in a serum free medium comprising at least one GSK3 inhibitor at a concentration ranging from 0.05 μM to 0.2 μM, wherein the human embryonic stem cells are cultured in the absence of feeder cells; b) culturing the cells resulting from step a) in a serum-free medium comprising vascular endothelial growth factor (VEGF) and bone morphogenic protein 4 (BMP4) in an amount sufficient to induce formation of embryoid bodies comprising human hemangio-colony forming cells; c) adding at least one growth factor to the culture resulting from step b), wherein the growth factor is in an amount sufficient to expand human hemangio-colony forming cells; d) disaggregating the hemangio-colony forming cells resulting from step c) into single cells; and e) culturing the single hemangio-colony forming cells resulting from step d) in mesenchymal stem cell medium containing serum, knockout serum replacement (KOSR) or in a serum-free medium to induce differentiation of the single cells into human mesenchymal stem cells; wherein at least 90% of the hES-MSCs express CD73; and said hES-MSCs: (i) comprise greater than 95% of cells expressing CD73, CD90, CD105, CD146, CD166, and CD44; (ii) comprise greater than 80% of cells expressing CD13, CD29, CD54, and CD49E; (iii) comprise less than 5% of cells	A method for producing human embryonic stem cell-derived mesenchymal stem cells (hES-MSCs), comprising: a. culturing human embryonic stem cells in a serum free medium comprising at least one GSK3 inhibitor at a concentration ranging from 0.05 μM to 0.2 μM, wherein the human embryonic stem cells are cultured in the absence of feeder cells; b. culturing the cells from step a) in a serum-free medium comprising vascular endothelial growth factor (VEGF) and bone morphogenic protein 4 (BMP4) in an amount sufficient to induce formation of embryoid bodies comprising human hemangio-colony forming cells; c. adding at least one growth factor to the culture resulting from step b), wherein said at least one growth factor is selected from the group consisting of VEGF, Thrombopoietin (TPO) and flt3 ligand (FL T3), said growth factor being in an amount sufficient to expand human hemangio-colony forming cells; d. disaggregating the hemangio-colony forming cells resulting from step c) into single cells; and e. culturing the single hemangio-colony forming cells resulting from step d) in mesenchymal stem cell medium containing serum, knockout serum replacement(KOSR), or in a serum-free medium to induce differentiation of the single cells into human mesenchymal stem cells; wherein at least 90% of the hES-MSCs express CD73, and said hES-MSCs: (i) comprise greater than 95% of cells expressing CD90, CD105, CD146, CD166, and CD44; (ii) comprise greater than 80% of cells expressing CD13, CD29, CD54, and CD49E; (iii) comprise less than 5% of cells

	expressing CD45, CD34, CD31 and SSEA4; (iv) express IL-10 and TGFβ; (v) comprise less than 2% of cells expressing IL-6, IL-12 and TNFa; and (vi) comprise less than 0.001 % of cells co-expressing OCT4, NANOG, TRA-1-60 and SSEA4.	expressing CD45, CD34, CD31 and SSEA4; (iv) express IL-10 and TGFβ; (v) comprise less than 2% of cells expressing IL-6, IL-12 and TNFa; and (vi) comprise less than 0.001 % of cells co-expressing OCT4, NANOG, TRA-1-60 and SSEA4.
2	The method of claim 1, wherein the hES-MSCs do not express IL-6, IL12 and TNFα.	The method of claim 1, wherein the hES-MSCs do not express IL-6, IL12 and TNFα.
3	The method of claim 1, wherein the hES-MSCs express TGF-beta1, TGF-beta2 and IL10.	The method of claim 1, wherein the hES-MSCs express TGF-beta1, TGF-beta2 and IL10.
4	The method of claim 1, wherein the hES-MSCs do not express CCL2, MMP2 and RAGE.	The method of claim 1, wherein the hES-MSCs do not express CCL2, MMP2 and RAGE.
5	The method of claim 1, wherein the hES-MSCs have lower expression of IFNγR 1 and IFNγR2 as compared to IFNγR1 and IFNγR2 expression in bone marrow-derived mesenchymal stem cells.	The method of claim 1, wherein the hES-MSCs have lower expression of IFNγR 1 and IFNγR2 as compared to IFNγR1 and IFNγR2 expression in bone marrow derived mesenchymal stem cells.
6	The method of claim 1, further comprising a step of irradiating the human mesenchymal stem cells.	The method of claim 1, further comprising a step of irradiating the human mesenchymal stem cells.
7	The method of claim 6, wherein the human mesenchymal stem cells are irradiated with gamma-irradiation.	The method of claim 6, wherein the human mesenchymal stem cells are irradiated with gamma-irradiation.
8	The method of claim 1, wherein the hES-MSCs are further modified by genetic modification, epigenetic regulation, small molecule, nutraceutical, natural compound, or antibody treatment.	The method of claim 1, wherein the hES-MSCs are further modified by genetic modification, epigenetic regulation, small molecule, nutraceutical, natural compound, or antibody treatment.
9	The method of claim 1, further comprising co-culturing the hES-MSCs with hematopoietic stem cells.	The method of claim 1, further comprising co-culturing the hES-MSCs with hematopoietic stem cells.
10	The method of claim 9, wherein the hematopoietic stem cells comprise bone marrow hematopoietic stem cells, umbilical-cord hematopoietic stem cells, or a combination thereof.	The method of claim 9, wherein the hematopoietic stem cells comprise bone marrow hematopoietic stem cells, umbilical-cord hematopoietic stem cells, or a combination thereof.
11	The method of claim 1, wherein the GSK3 inhibitor is (2'Z,3'E)-6-Bromoindirubin-3'-oxime (BIO).	The method of claim 1, wherein the GSK3 inhibitor is (2'Z,3'E)-6-Bromoindirubin-3'-oxime (BIO).

	U.S. Patent No. 10,557,122 Claim 1	Canadian Patent Application No. CA2876499 Claim 12
	A method for immunosuppressing T-cells, the method comprising contacting T-cells with an effective dose of human embryonic stem cell derived mesenchymal stem cells (hES-MSCs), wherein said contacting results in immunosuppressing T-cells, and the hES-MSCs are produced by a method comprising the steps of: [Steps a-e and the wherein clause in '551 patent, claim 1].	Use of human embryonic stem cell derived mesenchymal stem cells (hES-MSCs), as produced by the method as defined in any one of claims 1-11, for immunosuppressing T cells.